

## SEQUENCE LISTING

&lt;210&gt; 1

&lt;211&gt; 2836

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)...(2136)

&lt;400&gt; 1

atg gcg gag cga gag agc ggc ggc ctg gga ggg ggg gcc gcg tcc ccg 48

Met Ala Glu Arg Glu Ser Gly Gly Leu Gly Gly Gly Ala Ala Ser Pro

1 5 10 15

ccc gcc gcc tcc ccg ttc ctg ggg ctg cac atc gct tgc cct ccc aat 96

Pro Ala Ala Ser Pro Phe Leu Gly Leu His Ile Ala Ser Pro Pro Asn

20 25 30

ttc agg ctc acc cat gac atc agc ctg gag gag ttt gag gat gaa gac 144

Phe Arg Leu Thr His Asp Ile Ser Leu Glu Glu Phe Glu Asp Glu Asp

35 40 45

ctc tgc gag atc act gat gag tgt ggc atc agc tta cag tgc aaa gac 192

Leu Ser Glu Ile Thr Asp Glu Cys Gly Ile Ser Leu Gln Cys Lys Asp

50 55 60

acc ctg tcc tta cgg ccc ccg cgc gcc ggg ctg ctc tct gcg ggc ggc 240

Thr Leu Ser Leu Arg Pro Pro Arg Ala Gly Leu Leu Ser Ala Gly Gly

65                      70                      75                      80

ggc ggc gcg ggg agc cgg ttg cag gcc gag atg ctg cag atg gac ctg    288  
Gly Gly Ala Gly Ser Arg Leu Gln Ala Glu Met Leu Gln Met Asp Leu

5                                      85                                      90                                      95

atc gac gcg acg ggg gac act ccc ggg gcc gag gac gac gag gag gac    336  
Ile Asp Ala Thr Gly Asp Thr Pro Gly Ala Glu Asp Asp Glu Glu Asp

100                      105                      110

10  
gac gac gag gag cgc gcg gcc cgg cgg ccg gga gcg ggg ccg ccc aag    384  
Asp Asp Glu Glu Arg Ala Ala Arg Arg Pro Gly Ala Gly Pro Pro Lys

115                      120                      125

15  
gcc gaa tcc ggc cag gag ccg gcg tcc cgc ggc cag ggc cag agc caa    432  
Ala Glu Ser Gly Gln Glu Pro Ala Ser Arg Gly Gln Gly Gln Ser Gln

130                      135                      140

20  
ggc cag agc cag ggc ccg ggc agc ggg gac acg tac cgg ccc aag cgg    480  
Gly Gln Ser Gln Gly Pro Gly Ser Gly Asp Thr Tyr Arg Pro Lys Arg

145                      150                      155                      160

ccc acc acg ctc aac ctc ttt ccg cag gtg ccg cgg tct cag gac aca    528  
Pro Thr Thr Leu Asn Leu Phe Pro Gln Val Pro Arg Ser Gln Asp Thr

25                                      165                                      170                                      175

ctg aat aat aat tct ctg ggc aaa aag cac agt tgg cag gat cgg gtg    576  
Leu Asn Asn Asn Ser Leu Gly Lys Lys His Ser Trp Gln Asp Arg Val

180                      185                      190

30

tct cga tca tcc tca ccc ctg aag aca ggg gag cag aca cca ccg cat 624

Ser Arg Ser Ser Ser Pro Leu Lys Thr Gly Glu Gln Thr Pro Pro His

195 200 205

5 gaa cac atc tgc ctg agc gag gag ctg ccc ccc cag agc ggc ccc gcc 672

Glu His Ile Cys Leu Ser Glu Glu Leu Pro Pro Gln Ser Gly Pro Ala

210 215 220

ccc acc aca gat cga ggc acc tcc acc gac agc cct tgc cgc cgc agc 720

Pro Thr Thr Asp Arg Gly Thr Ser Thr Asp Ser Pro Cys Arg Arg Ser

225 230 235 240

aca gcc acc cag atg gca cct ccg ggt ggt ccc cct gct gcc ccg cct 768

Thr Ala Thr Gln Met Ala Pro Pro Gly Gly Pro Pro Ala Ala Pro Pro

245 250 255

ggg ggt cgg ggc cac tcg cat cga gac cga atc cac tac cag gcc gat 816

Gly Gly Arg Gly His Ser His Arg Asp Arg Ile His Tyr Gln Ala Asp

260 265 270

gtg cga cta gag gcc act gag gag atc tac ctg acc cca gtg cag agg 864

Val Arg Leu Glu Ala Thr Glu Glu Ile Tyr Leu Thr Pro Val Gln Arg

275 280 285

ccc cca gac gct gca gag ccc acc tcc gcc ttc ctg ccg ccc act gag 912

Pro Pro Asp Ala Ala Glu Pro Thr Ser Ala Phe Leu Pro Pro Thr Glu

290 295 300

agc cgg atg tca gtc agc tcc gat cca gac cct gcc gcc tac ccc tcc 960

Ser Arg Met Ser Val Ser Ser Asp Pro Asp Pro Ala Ala Tyr Pro Ser

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305                    310                    315                    320

acg gca ggg cgg ccg cac ccc tcc atc agt gaa gag gaa gag ggc ttc    1008  
Thr Ala Gly Arg Pro His Pro Ser Ile Ser Glu Glu Glu Glu Gly Phe

5                                    325                    330                    335

gac tgc ctg tgc tcc cca gag cgg gct gag ccc cca ggc gga ggg tgg    1056  
Asp Cys Leu Ser Ser Pro Glu Arg Ala Glu Pro Pro Gly Gly Gly Trp

340                    345                    350

10                                    cgg ggg agc ctg ggg gag ccg ccg cca cct cca cgg gcc tct ctg agc    1104  
Arg Gly Ser Leu Gly Glu Pro Pro Pro Pro Arg Ala Ser Leu Ser

355                    360                    365

15                                    tgc gac acc agc gcc ctg tcc tat gac tct gtc aag tac acg ctg gtg    1152  
Ser Asp Thr Ser Ala Leu Ser Tyr Asp Ser Val Lys Tyr Thr Leu Val

370                    375                    380

20                                    gta gat gag cat gca cag ctg gag ctg gtg agc ctg cgg ccg tgc ttc    1200  
Val Asp Glu His Ala Gln Leu Glu Leu Val Ser Leu Arg Pro Cys Phe

385                    390                    395                    400

25                                    gga gac tac agt gac gag agt gac tct gcc acc gtc tat gac aac tgt    1248  
Gly Asp Tyr Ser Asp Glu Ser Asp Ser Ala Thr Val Tyr Asp Asn Cys

405                    410                    415

30                                    gcc tcc gtc tcc tgc ccc tat gag tgc gcc atc gga gag gaa tat gag    1296  
Ala Ser Val Ser Ser Pro Tyr Glu Ser Ala Ile Gly Glu Glu Tyr Glu

420                    425                    430

gag gcc ccg cgg ccc cag ccc cct gcc tgc ctc tcc gag gac tcc acg 1344

Glu Ala Pro Arg Pro Gln Pro Pro Ala Cys Leu Ser Glu Asp Ser Thr

435 440 445

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cct gat gaa ccc gac gtc cat ttc tcc aag aaa ttc ctg aac gtc ttc 1392

Pro Asp Glu Pro Asp Val His Phe Ser Lys Lys Phe Leu Asn Val Phe

450 455 460

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atg agt ggc cgc tcc cgc tcc tcc agt gct gag tcc ttc ggg ctg ttc 1440

Met Ser Gly Arg Ser Arg Ser Ser Ala Glu Ser Phe Gly Leu Phe

465 470 475 480

tcc tgc atc atc aac ggg gag gag cag gag cag acc cac cgg gcc ata 1488

Ser Cys Ile Ile Asn Gly Glu Glu Gln Glu Gln Thr His Arg Ala Ile

485 490 495

ttc agg ttt gtg cct cga cac gaa gac gaa ctt gag ctg gaa gtg gat 1536

Phe Arg Phe Val Pro Arg His Glu Asp Glu Leu Glu Leu Glu Val Asp

500 505 510

20

gac cct ctg cta gtg gag ctc cag gct gaa gac tac tgg tac gag gcc 1584

Asp Pro Leu Leu Val Glu Leu Gln Ala Glu Asp Tyr Trp Tyr Glu Ala

515 520 525

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tac aac atg cgc act ggt gcc cgg ggt gtc ttt cct gcc tat tac gcc 1632

Tyr Asn Met Arg Thr Gly Ala Arg Gly Val Phe Pro Ala Tyr Tyr Ala

530 535 540

atc gag gtc acc aag gag ccc gag cac atg gca gcc ctg gcc aaa aac 1680

Ile Glu Val Thr Lys Glu Pro Glu His Met Ala Ala Leu Ala Lys Asn

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545                    550                    555                    560

agt gac tgg gtg gac cag ttc cgg gtg aag ttc ctg ggc tca gtc cag    1728  
Ser Asp Trp Val Asp Gln Phe Arg Val Lys Phe Leu Gly Ser Val Gln

5                                    565                    570                    575

gtt ccc tat cac aag ggc aat gac gtc ctc tgt gct gct atg caa aag    1776  
Val Pro Tyr His Lys Gly Asn Asp Val Leu Cys Ala Ala Met Gln Lys

580                    585                    590

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att gcc acc acc cgc cgg ctc acc gtg cac ttt aac ccg ccc tcc agc    1824  
Ile Ala Thr Thr Arg Arg Leu Thr Val His Phe Asn Pro Pro Ser Ser

595                    600                    605

tgt gtc ctg gag atc agc gtg cgg ggt gtg aag ata ggc gtc aag gcc    1872  
Cys Val Leu Glu Ile Ser Val Arg Gly Val Lys Ile Gly Val Lys Ala

610                    615                    620

gat gac tcc cag gag gcc aag ggg aat aaa tgt agc cac ttt ttc cag    1920  
Asp Asp Ser Gln Glu Ala Lys Gly Asn Lys Cys Ser His Phe Phe Gln

625                    630                    635                    640

tta aaa aac atc tct ttc tgc gga tat cat cca aag aac aac aag tac    1968  
Leu Lys Asn Ile Ser Phe Cys Gly Tyr His Pro Lys Asn Asn Lys Tyr

25                                    645                    650                    655

ttt ggg ttc atc acc aag cac ccc gcc gac cac cgg ttt gcc tgc cac    2016  
Phe Gly Phe Ile Thr Lys His Pro Ala Asp His Arg Phe Ala Cys His

660                    665                    670

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gtc ttt gtg tct gaa gac tcc acc aaa gcc ctg gca gag tcc gtg ggg 2064  
 Val Phe Val Ser Glu Asp Ser Thr Lys Ala Leu Ala Glu Ser Val Gly  
 675 680 685

aga gca ttc cag cag ttc tac aag cag ttt gtg gag tac acc tgc ccc 2112  
 Arg Ala Phe Gln Gln Phe Tyr Lys Gln Phe Val Glu Tyr Thr Cys Pro  
 690 695 700

aca gaa gat atc tac ctg gag tag ctgtgcagcc ccgccctctg cgtcccccag 2166  
 Thr Glu Asp Ile Tyr Leu Glu \*  
 705 710

ccctcaggcc agtgcagga cagctggctg ctgacaggat gtggcactgc ttgaggaggg 2226  
 gcacctgcca ccgccagagg acaaggaagt gggggccgct ggcccagggt aggggagggt 2286  
 ggggcaatgg ggagaggcaa atgcagtta ttgtaataata tgggattaga ttcattctatg 2346  
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 cagagaagga tgtccgttcc aggagcacac ggccctgccc catcctgggc cttacctccc 2466  
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 caaaaaaaaa 2836

<210> 2

<211> 711

<212> PRT

<213> Homo sapiens

&lt;400&gt; 2

Met Ala Glu Arg Glu Ser Gly Gly Leu Gly Gly Gly Ala Ala Ser Pro

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Pro Ala Ala Ser Pro Phe Leu Gly Leu His Ile Ala Ser Pro Pro Asn

20 25 30

Phe Arg Leu Thr His Asp Ile Ser Leu Glu Glu Phe Glu Asp Glu Asp

35 40 45

Leu Ser Glu Ile Thr Asp Glu Cys Gly Ile Ser Leu Gln Cys Lys Asp

50 55 60

Thr Leu Ser Leu Arg Pro Pro Arg Ala Gly Leu Leu Ser Ala Gly Gly

65 70 75 80

Gly Gly Ala Gly Ser Arg Leu Gln Ala Glu Met Leu Gln Met Asp Leu

85 90 95

Ile Asp Ala Thr Gly Asp Thr Pro Gly Ala Glu Asp Asp Glu Glu Asp

100 105 110

Asp Asp Glu Glu Arg Ala Ala Arg Arg Pro Gly Ala Gly Pro Pro Lys

115 120 125

Ala Glu Ser Gly Gln Glu Pro Ala Ser Arg Gly Gln Gly Gln Ser Gln

130 135 140

Gly Gln Ser Gln Gly Pro Gly Ser Gly Asp Thr Tyr Arg Pro Lys Arg

145 150 155 160

Pro Thr Thr Leu Asn Leu Phe Pro Gln Val Pro Arg Ser Gln Asp Thr

165 170 175

Leu Asn Asn Asn Ser Leu Gly Lys Lys His Ser Trp Gln Asp Arg Val

180 185 190

Ser Arg Ser Ser Ser Pro Leu Lys Thr Gly Glu Gln Thr Pro Pro His

195 200 205

Glu His Ile Cys Leu Ser Glu Glu Leu Pro Pro Gln Ser Gly Pro Ala

210 215 220

Pro Thr Thr Asp Arg Gly Thr Ser Thr Asp Ser Pro Cys Arg Arg Ser



225            230            235            240  
 Thr Ala Thr Gln Met Ala Pro Pro Gly Gly Pro Pro Ala Ala Pro Pro  
                  245            250            255  
 Gly Gly Arg Gly His Ser His Arg Asp Arg Ile His Tyr Gln Ala Asp  
                  260            265            270  
 Val Arg Leu Glu Ala Thr Glu Glu Ile Tyr Leu Thr Pro Val Gln Arg  
                  275            280            285  
 Pro Pro Asp Ala Ala Glu Pro Thr Ser Ala Phe Leu Pro Pro Thr Glu  
                  290            295            300  
 Ser Arg Met Ser Val Ser Ser Asp Pro Asp Pro Ala Ala Tyr Pro Ser  
 305            310            315            320  
 Thr Ala Gly Arg Pro His Pro Ser Ile Ser Glu Glu Glu Gly Phe  
                  325            330            335  
 Asp Cys Leu Ser Ser Pro Glu Arg Ala Glu Pro Pro Gly Gly Gly Trp  
                  340            345            350  
 Arg Gly Ser Leu Gly Glu Pro Pro Pro Pro Pro Arg Ala Ser Leu Ser  
                  355            360            365  
 Ser Asp Thr Ser Ala Leu Ser Tyr Asp Ser Val Lys Tyr Thr Leu Val  
                  370            375            380  
 Val Asp Glu His Ala Gln Leu Glu Leu Val Ser Leu Arg Pro Cys Phe  
                  385            390            395            400  
 Gly Asp Tyr Ser Asp Glu Ser Asp Ser Ala Thr Val Tyr Asp Asn Cys  
                  405            410            415  
 Ala Ser Val Ser Ser Pro Tyr Glu Ser Ala Ile Gly Glu Glu Tyr Glu  
                  420            425            430  
 Glu Ala Pro Arg Pro Gln Pro Pro Ala Cys Leu Ser Glu Asp Ser Thr  
                  435            440            445  
 Pro Asp Glu Pro Asp Val His Phe Ser Lys Lys Phe Leu Asn Val Phe  
                  450            455            460  
 Met Ser Gly Arg Ser Arg Ser Ser Ser Ala Glu Ser Phe Gly Leu Phe

465            470            475            480  
 Ser Cys Ile Ile Asn Gly Glu Glu Gln Glu Gln Thr His Arg Ala Ile  
               485            490            495  
 Phe Arg Phe Val Pro Arg His Glu Asp Glu Leu Glu Leu Glu Val Asp  
 5               500            505            510  
 Asp Pro Leu Leu Val Glu Leu Gln Ala Glu Asp Tyr Trp Tyr Glu Ala  
               515            520            525  
 Tyr Asn Met Arg Thr Gly Ala Arg Gly Val Phe Pro Ala Tyr Tyr Ala  
               530            535            540  
 10            Ile Glu Val Thr Lys Glu Pro Glu His Met Ala Ala Leu Ala Lys Asn  
 545            550            555            560  
 Ser Asp Trp Val Asp Gln Phe Arg Val Lys Phe Leu Gly Ser Val Gln  
               565            570            575  
 Val Pro Tyr His Lys Gly Asn Asp Val Leu Cys Ala Ala Met Gln Lys  
               580            585            590  
 15            Ile Ala Thr Thr Arg Arg Leu Thr Val His Phe Asn Pro Pro Ser Ser  
               595            600            605  
 Cys Val Leu Glu Ile Ser Val Arg Gly Val Lys Ile Gly Val Lys Ala  
               610            615            620  
 20            Asp Asp Ser Gln Glu Ala Lys Gly Asn Lys Cys Ser His Phe Phe Gln  
 625            630            635            640  
 Leu Lys Asn Ile Ser Phe Cys Gly Tyr His Pro Lys Asn Asn Lys Tyr  
               645            650            655  
 Phe Gly Phe Ile Thr Lys His Pro Ala Asp His Arg Phe Ala Cys His  
               660            665            670  
 25            Val Phe Val Ser Glu Asp Ser Thr Lys Ala Leu Ala Glu Ser Val Gly  
               675            680            685  
 Arg Ala Phe Gln Gln Phe Tyr Lys Gln Phe Val Glu Tyr Thr Cys Pro  
               690            695            700  
 30            Thr Glu Asp Ile Tyr Leu Glu

705            710

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<211> 19

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<212> PRT

<213> Homo sapiens

<400> 3

Gly Val Lys Ile Gly Val Lys Ala Asp Asp Ser Gln Glu Ala Lys Gly

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Asn Lys Cys

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